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Are NHS Stop Smoking Services Reducing Health Inequalities in the North East of England?

Background

The equity profile described in this report is based on the work commissioned by the Smoke Free North East Office. It is intended to inform service commissioners and providers in regional and local tobacco control alliances, Strategic Health Authorities, Primary Care Trusts and North East Stop Smoking Services.

Cigarette smoking is a well recognised cause of preventable ill health, premature death and health inequalities in the North East of England. Smoking causes chronic respiratory disease, cardiovascular disease, cancers of lung and other sites. Smoking is more common amongst the disadvantaged than affluent members of society¹. Reducing smoking prevalence particularly in the less well off, is essential to reducing health inequalities in the North East.

To help smokers wanting to quit, NHS Stop Smoking Services (previously called

smoking cessation services) offer comprehensive, evidence-based interventions that include support, counselling and pharmaceutical treatment. *Smoking Kills*² recommends Stop Smoking Services should aim to reduce smoking particularly in children, young people, pregnant women and socially and economically disadvantaged adult smokers.

In the North East, Stop Smoking Services were set up initially in Health Action Zones and rolled out across the region during 1999-

2001; there are now ten in the region (see Table 1).

Since 2000, North East Stop Smoking Services have been effective in producing consistently higher annual smoking cessation rates at four weeks, than the average for England³.

This paper aims to find out if the services are also effective in reducing health inequalities in the region, as defined by:

- Age;
- Sex;
- Ethnicity; and
- Socioeconomic position of the smoker.

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Summary

- Six percent of North East smokers set quit dates each year.
- A higher proportion of smokers are quitting through these services in the more deprived areas than affluent ones. These services are therefore appropriately targeted to reduce socioeconomic inequalities.
- A higher proportion of female smokers are quitting, but this is not statistically significant at 52 weeks; and so services may be contributing to reducing the gender inequality in smoking.
- Services are not attracting younger smokers very well and so are not affecting age inequalities.
- Smokers from Black and Minority Ethnic groups appear less likely to access services but the small numbers make interpretation more difficult than for other inequalities.

Table 1: NHS Stop Smoking Services

Stop Smoking Service	Primary Care Organisation	Population aged 18 +
Northumberland	Northumberland Health Care Trust	241,296
Newcastle and North Tyneside	Newcastle PCT North Tyneside PCT	204,798 150,253
Gateshead and South Tyneside	Gateshead PCT South Tyneside PCT	149,365 117,796
Sunderland	Sunderland Teaching PCT	217,078
Durham & Chester-le-Street	Durham & Chester-le-Street PCT	113,318
Derwentside	Derwentside PCT	66,670
Easington	Easington PCT	72,011
Sedgefield	Sedgefield PCT	67,470
Darlington	Darlington PCT	75,564
Durham Dales	Durham Dales PCT	67,345
Teesside services	Hartlepool PCT North Tees PCT Langbaurgh PCT Middlesbrough PCT [†]	66,791 135,569 75,224 132,185
North East		1,952,733

Source: Office for National Statistics, Census 2001, Standard Table ST0001

NOTE: [†] Since the period of this study, a new service has been set up to provide Stop Smoking Services to Middlesbrough PCT.

Methods

We compared access to Stop Smoking Services to smoking prevalence in a number of groups.

Definition of terms as used in this report

Access	applies only to clients who set quit dates ; it does not include smokers who make initial contact with the service but do not set quit dates.
Successful quitting	refers to clients who have not smoked any cigarettes at four weeks and 52 weeks after setting a quit date. Analysis of quit outcome at four weeks and 52 weeks were undertaken assuming that where information on smoking status (that is quit/not quit) were not recorded, the outcome was counted as 'not quit'.
Carbon Monoxide (CO) Test	is a breath test used by NHS Stop Smoking services to verify clients' reports of stopping smoking and to give feedback to encourage quitting. Carbon monoxide (CO) is a toxic substance found in cigarettes.
Ethnic categories	are the five Census categories of White, Asian, Black, Mixed and Other.
Prescription	Nicotine Replacement Therapy (NRT) or Bupropion (Zyban) are prescribed to increase the proportion of smokers who quit.

Data source

To assess the effectiveness of North East Stop Smoking Services in reducing health inequalities, we undertook a population based study using Stop Smoking Service data for the financial year 2003/04. We requested the following variables from the 16 Primary Care Trusts (PCTs) in the North East region:

- Age, Sex, Ethnicity, Postcode of residence;
- Nicotine Replacement Therapy (NRT) prescription data;
- Quit outcome at 4 week and 52 week follow-up;
- Carbon Monoxide (CO) validation.

Data were extracted from individual services and collated into an anonymised regional database held securely at the North East PHO. Records were excluded if their age, sex or postcode were missing or incomplete.

Health Survey for England⁴ (HSE 2000-2002) data on smoking were used to estimate smoking prevalence in North East smokers by age and sex. All people setting quit dates in the age group “less than 18”(<18) are assumed to be 16 or 17 years old, as HSE data are not available for individuals aged less than 16. 2001 Census data and HSE data 2002 were used to estimate smoking prevalence in deprivation quintiles.

Assessing socioeconomic inequality

The NHS has been asked to contribute to ‘the reduction of smoking among manual groups from 31% in 2004 to 26% in 2010 and to deliver a one percentage point reduction per year in the proportion of women continuing to smoke throughout pregnancy, focusing especially on smokers from disadvantaged groups’⁵. However, the Department of Health has not required Stop Smoking Services to routinely collect socioeconomic data. There are therefore no direct measures of income, occupation or education recorded routinely by North East Stop Smoking Services. We considered the following variables as possible indicators of socioeconomic status:

- Client’s occupation - few services collected this; where collected group definitions were not consistent between services.
- Eligibility for free NRT prescriptions/vouchers – not uniformly available.
- Client’s postcode of residence – electronic data available for 14 of 16 PCTs.

We chose the client’s postcode of residence as the best available *proxy indicator* of socioeconomic position. Each client’s record was assigned a deprivation quintile, based on the lower Super Output Area (LSOA) of residence and the corresponding score from the Index of Multiple Deprivation (ID 2004). Quintile 1 refers to the least deprived (most affluent) and Quintile 5, the most deprived. We estimated smoking prevalence for adults (aged 16+) in each quintile using data from 2001 Census and 2002 Health Survey for England (see Table 2).

Table 2: Estimates of North East smokers in Deprivation Quintiles

Quintile	Population	Estimated Number of smokers	Estimated prevalence rate of smokers	Estimated percentage of smokers in each quintile
1 (least deprived)	151,670	32,013	21%	6%
2	302,958	72,483	24%	13%
3	330,114	86,660	26%	15%
4	484,548	142,307	29%	25%
5 (most deprived)	748,653	243,775	33%	42%
Total	2,017,943	577,238		100%

Appropriate statistical analyses were done using Chi Square tests; p values are also presented. Logistic regression was used to study the effect of different predictor variables: age, sex, deprivation quintile, NRT prescription and PCT of residence, on smoking cessation (quit outcome) at 4 weeks.

Data quality

We obtained data from 14 of the 16 North East PCTs for further analysis. Twelve PCTs provided data for the period March 2003-April 2004; two PCTs, Newcastle and North Tyneside, provided data for the two quarters October 2003-March 2004. Derwentside and Durham Dales PCTs could only provide data by general practice as clients' postcodes of residence were not readily available for the requested period of study. These are not included in the aggregated analysis. Results given here are for twelve PCTs, unless indicated otherwise (Table 3).

Table 3: Initial data inclusions and exclusions

Data received	Number	%
Total number received from 14 PCTs (including Newcastle & North Tyneside=3,366)	31,839	100.00
Total number received from 12 PCTs for April 2003-March 2004 (4 quarters)	28,473	89.42
Number missing / incomplete post codes		
for 12 PCTs	2690	9.44
for Newcastle & North Tyneside PCTs	1364	40.52
Number with age not recorded	13	0.04
Number with gender not recorded (1 with age and gender missing)	59	0.19
Number with ethnicity not recorded	252	0.79

Please note that at each level of analysis further data may be missing: e.g., where quit details not recorded. These are indicated in corresponding sections.

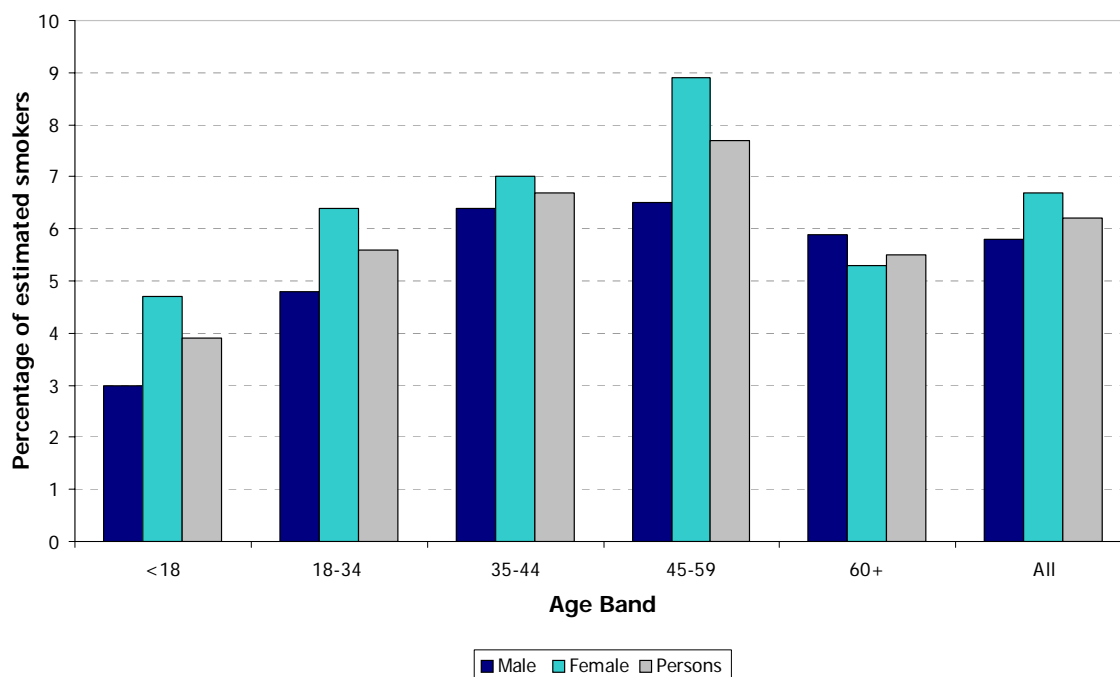
Analysis

Access to North East Stop Smoking Services

28,473 clients, (about 6% of smokers) accessed Stop Smoking Services from the 12 PCTs included in the analysis.

Access by age and sex

Figure 1: Smokers who set a quit date as a percentage of estimated smokers, by age and sex 2003/04



[n=28,473]

Analysis of the data for those setting a quit date, using a χ^2 test across all age groups, shows that access varied considerably by age group in both sexes, and these differences were statistically significant ($p < 0.001$).

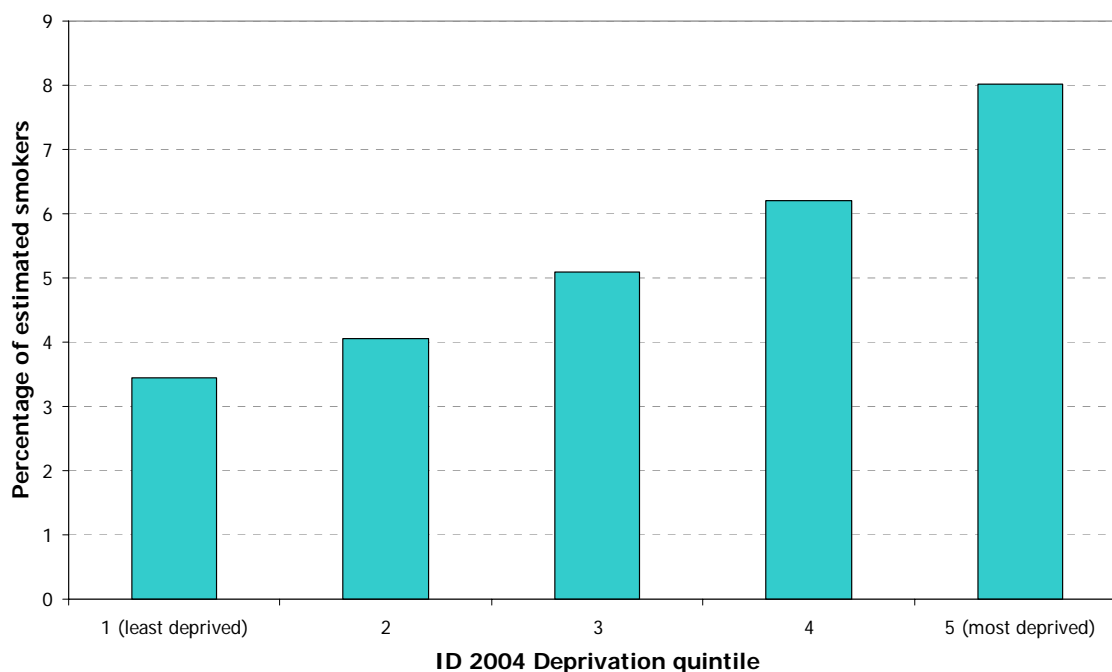
A higher proportion of women smokers than men smokers set quit dates ($p < 0.001$). The difference was statistically significant.

Access by ethnic category

Demographic data for the North East shows that the average non-white ethnic population is 2.4%. Only three PCTs: South Tyneside (2.7%), Newcastle (6.9%), and Middlesbrough (5.8%) have a higher proportion of ethnic residents than the regional average. Stop Smoking Services data showed that only 0.7% of smokers accessing the service were non-white. However, as the numbers in the different ethnic sub-groups were small and different ethnic groups have very different smoking rates, it is difficult to interpret the data. Further details are available from the North East PHO.

Access by deprivation quintile of residence

Figure 2: Smokers who set a quit date as a percentage of estimated smokers, by deprivation quintile of residence



[n=28,473]

Figure 2 shows the estimated percentage of smokers who set a quit date, in each deprivation quintile. A higher percentage of smokers who set a quit date are resident in more deprived quintiles, where smoking prevalence is also high (see Table 2).

Access to Nicotine Replacement Therapy (NRT)

79% of clients setting quit dates for whom prescription data are available (n=25,765), were prescribed NRT and/or Zyban. 73% were prescribed NRT, 5% were given Zyban, and 1% were prescribed both. Of the 811 who were reported to have completed their course, the majority received a four week course. Data were analysed assuming that missing data meant that no drug had been prescribed.

The likelihood of receiving prescriptions appears similar for all ages and sexes. 79% of all smokers over 18 and 76% of those aged under 18 were prescribed NRT, Zyban or both.

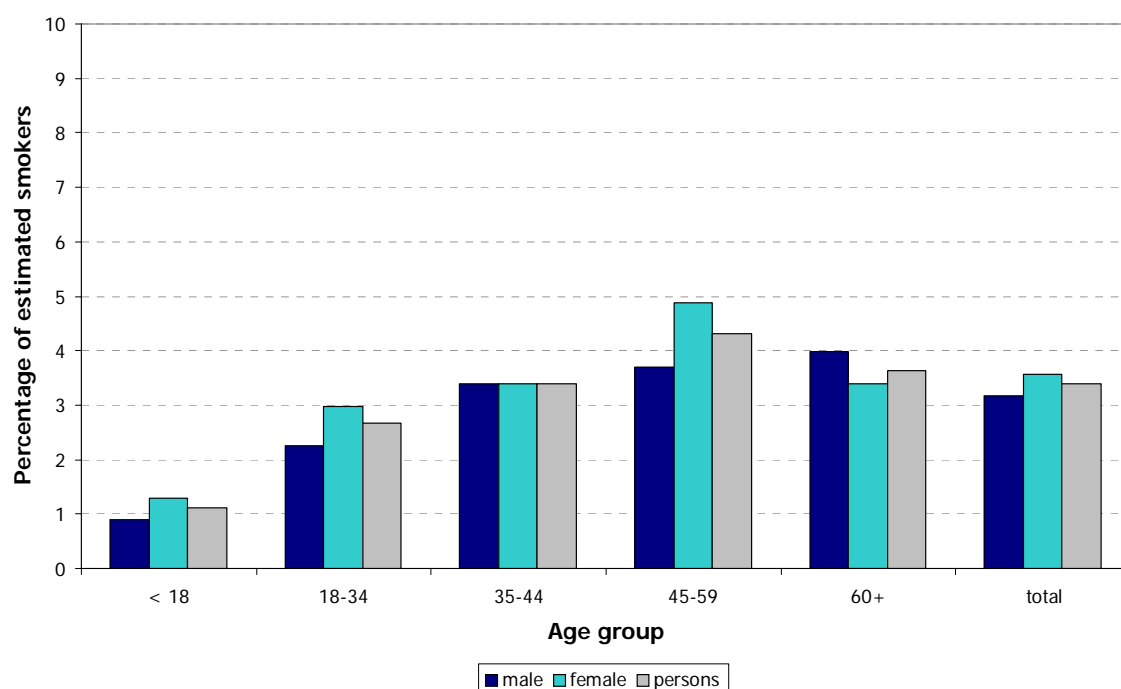
The proportion of clients receiving prescription did not vary with deprivation quintiles.

Outcome at four weeks

Four week follow up data were available for 24,828 people (about 77%) accessing the service. Over 50% of smokers who set a quit date had quit at four weeks. 58% of all people who said they had quit at four weeks had a Carbon Monoxide (CO) test. Of those who had the test, 99% had their successful quit validated by a CO test.

Quit outcome at four weeks by age and sex

[Figure 3: Successful quitters at four weeks as a percentage of estimated smokers, by age and sex](#)



[n=15,227]

Figure 3 shows that the probability of quitting at four weeks increased with age in both sexes, and this was statistically significant ($p < 0.001$). Smokers aged 60 and over were more than twice as likely to have succeeded at four weeks than people who were under 18 years. Women were more successful than men at quitting and this was statistically significant ($p < 0.001$).

Quit outcome at four weeks by ethnicity

Table 4 shows that of smokers who had their ethnic group recorded most were white. Quit outcome at four weeks appears not to vary with broad ethnic categories of 'white' and 'non-white', (z value 1.42, $p=0.157$). Numbers setting quit dates in ethnic groups other than white were small, making it difficult to interpret the data.

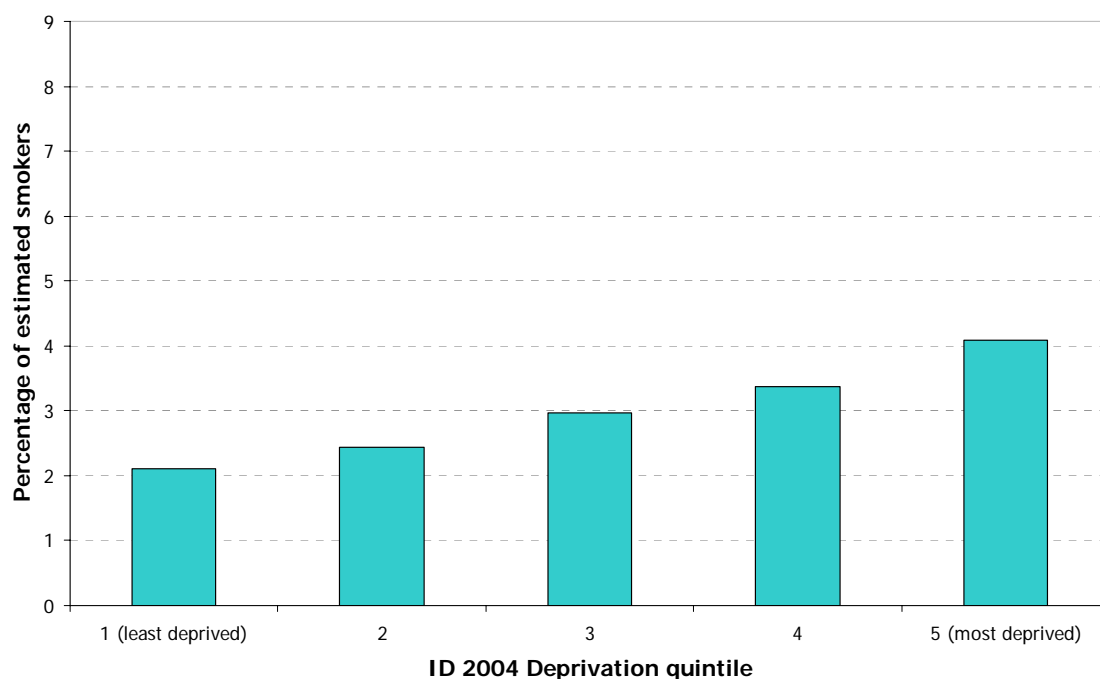
[Table 4: Four week quitters, by main ethnic grouping](#)

Ethnic Group	Not recorded	White	Mixed	Asian or Asian British	Black or Black British	Other Ethnic Groups
Number	164	14,970	25	49	13	14
Percentage	65	53	50	45	65	40

Quit outcome at four weeks by deprivation quintile

Figure 4 compared to figure 2 shows that people living in more deprived quintiles, were less likely to have quit successfully at four weeks, than those living in the more affluent quintiles and this is statistically significant ($p < 0.0001$). However, as a higher proportion of clients from more deprived quintiles set quit dates, overall the percentage quitting at four weeks still increased with deprivation.

Figure 4: Successful quitters at 4 weeks as a percentage of estimated smokers, by deprivation quintile

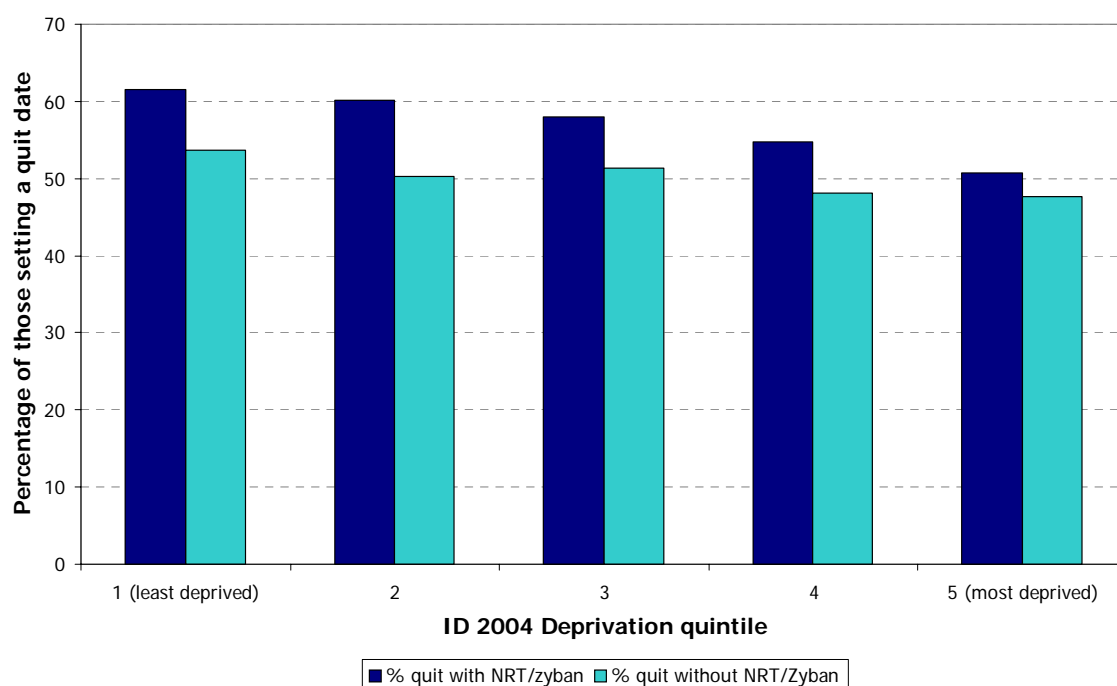


[n=28,203]

Quit outcome at four weeks and prescription of Nicotine Replacement Therapy (NRT)

Prescription of NRT and/or Zyban increases the likelihood of quitting at four weeks ($p < 0.0001$), and this is statistically significant. Figure 5 shows the increased likelihood of quitting in each deprivation quintile when prescribed medication and the decreased likelihood of quitting with increasing deprivation, even with prescription.

Figure 5: Quit outcome at 4 weeks as a percentage of those setting a quit date, by deprivation quintile and NRT/Zyban prescription



Effects of different variables in successful quit outcome at four weeks

Stepwise binary logistic regression analysis showed that increasing age, NRT/ Zyban prescription and increasing deprivation had a significant effect ($p < 0.01$) on a smoker's success or failure of quitting at four weeks. Client's sex and PCT of residence did not have a significant effect.

Quit outcome at 52 weeks

Sunderland TPCT provided 52 week follow-up data for 2003-04. Of the 73 checks recorded, 30 (41%) were classified as not smoking (self report). However, there were a number of missing data in this data set and in data provided for 2002/03. These data were therefore excluded from the analysis.

The Teesside Stop Smoking Service for North Tees, Middlesbrough, Langbaugh and Hartlepool gave 52 week follow-up data (self reports) for clients who set quit dates in 2002/03. Fourteen percent of clients reported having quit successfully at 52 weeks.

Quit outcome at 52 weeks by age and sex

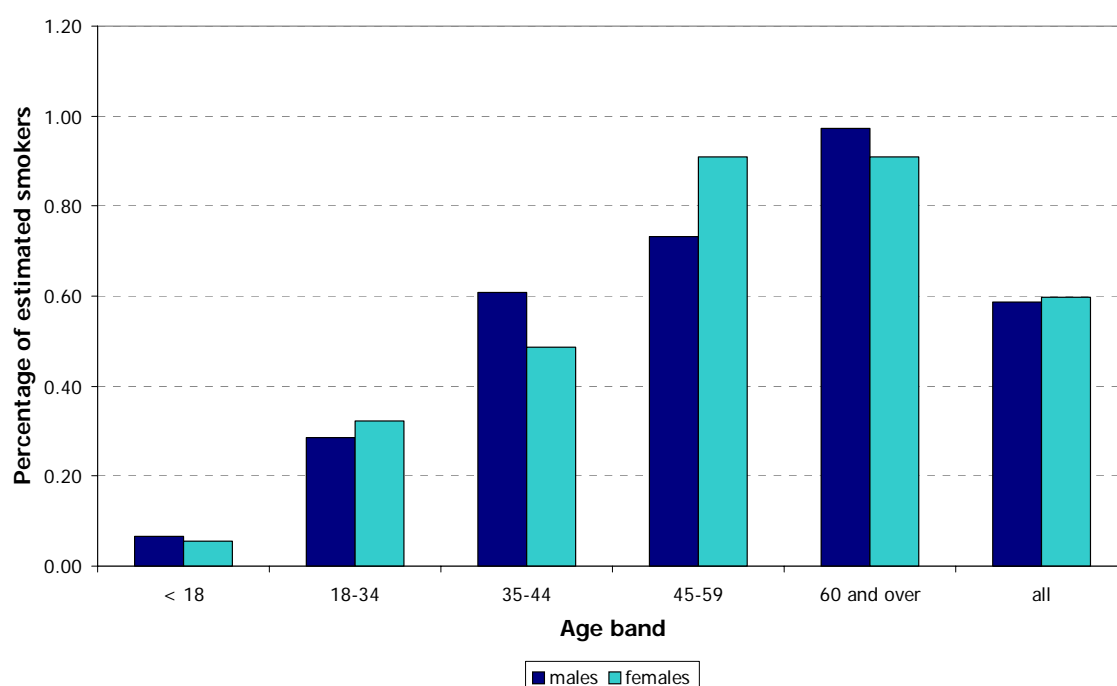
Using only the data from the Teesside Stop Smoking Services [$n=5,311$], the likelihood of people who are not smoking at 52 weeks increases with age, in both sexes; there was no significant difference between the sexes. CO test results were not available for the 52 week follow up.

Table 5: Successful quitters at 52 weeks as a percentage of estimated smokers, by age and sex

Gender	<18	18-34	35-44	45-59	60+	Total
Male	0.07	0.29	0.61	0.73	0.97	0.59
Female	0.06	0.32	0.49	0.91	0.91	0.60
All	0.07	0.29	0.61	0.73	0.97	0.59

NOTE: Table uses only 2002/03 data for Teesside Stop Smoking Services

Figure 6: Successful quitters at 52 weeks as a percentage of estimated smokers, by age and sex



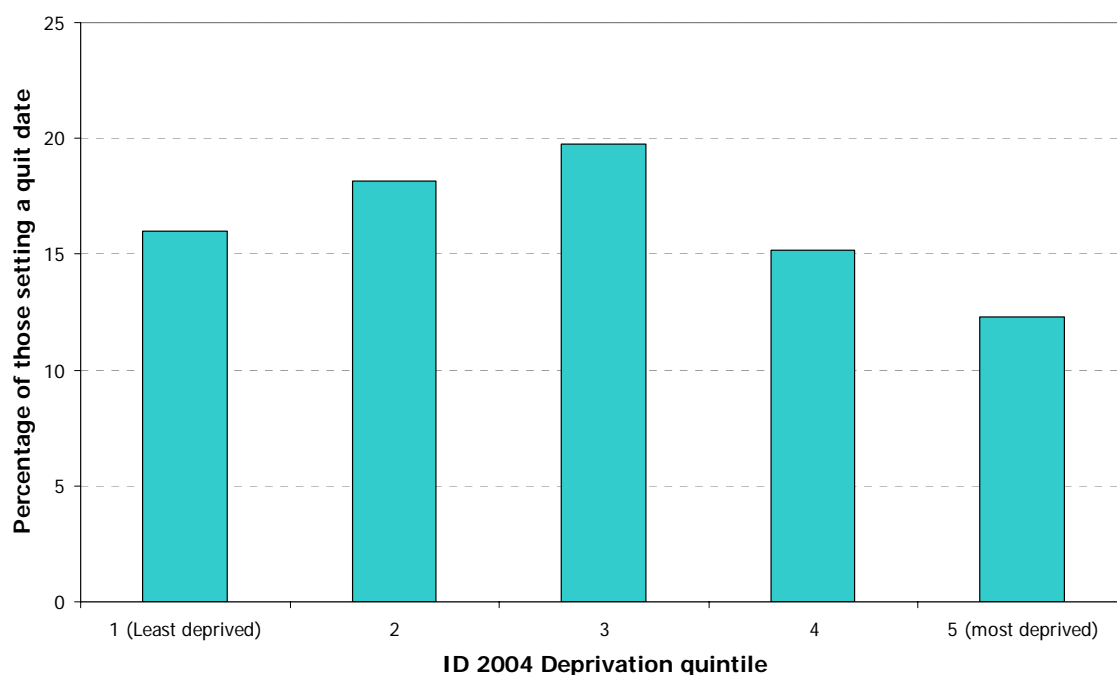
NOTE: Figure uses only 2002/03 data for Teesside Stop Smoking Services

Quit outcome at 52 weeks by deprivation quintile

Table 6: Successful quitters at 52 weeks as a percentage of those setting a quit date, by deprivation quintile (1= least deprived; 5= most deprived)

Deprivation Quintile	1	2	3	4	5
Self reported quitters	16	18	20	15	12

Figure 7: Quit outcome at 52 weeks as a percentage of those setting a quit date, by deprivation quintile



NOTE: Table and Figure use only 2002/03 data for Teesside Stop Smoking Services

Table 6 and Figure 7 show that clients setting quit dates in deprivation quintile 5 were less likely to be successful at 52 weeks than smokers living in the more affluent quintiles, ($p < 0.0001$) and this was statistically significant although there does not appear to be a linear trend.

Conclusions

- A higher proportion of smokers are quitting through these services in the more deprived areas than affluent ones. These services are therefore appropriately targeted to reduce socioeconomic inequalities.
- A higher proportion of female smokers are quitting, but this is not statistically significant at 52 weeks; so services may be contributing to reducing the gender inequality in smoking.
- Services are not attracting younger smokers very well and so are not affecting age inequalities.
- Smokers from Black and Minority Ethnic groups appear less likely to access services but the small numbers make interpretation more difficult than for other inequalities.

Recommendations

- The regional Smoke Free North East Office and PCTs should continue to strongly support and develop NE Stop Smoking Services. Stop Smoking Services must be an essential component of a much wider Tobacco Control Policy.
- North East Stop Smoking Services must review and address low uptake rates in younger smokers of both sexes.
- North East Stop Smoking Services should review ethnic monitoring of smokers. Better engagement with local communities and using qualitative approaches to understand smoking-related issues should be considered.
- North East Stop Smoking Services should continue to monitor access and outcome by gender. Services in this region must address the higher smoking prevalence in women.
- North East Stop Smoking Services should continue to ensure adequate access to services in deprived areas. Services should consider improving the quantity and/or quality of access in these areas in order to reduce further, the socioeconomic inequality in smoking prevalence.
- Recording of information is generally good, but can be improved further. The Smoke Free North East Office and regional alliances should consider developing a common database across the region. This will facilitate future research and equity audits.
- Stop Smoking Services should record basic demographic details including age, sex, ethnicity and postcode of residence for all smokers contacting the service, whether quit dates are set or not. A measure of socioeconomic position needs to be developed within the dataset – e.g., occupation, type of housing, educational level.
- Stop Smoking Services should try to improve collection of longer term follow-up data, at least up to 52 weeks.

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Further Information

Further details of the North East Stop Smoking Services data, analyses and methodology presented in this report are available from the North East PHO.

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